1 Online Appendix

1.1 Serial Correlation in the Intensity of Violence and the Association between Changes in Violence and Changes in Economic Variables

To estimate the effects of violence on child outcomes, this paper assumes that the monthly and municipality level variation in the intensity of massacres is orthogonal to the error term in (1). In this section, I provide some evidence that supports this identifying assumption by showing that: i) the intensity of massacres displays little serial correlation over time and ii), changes in the intensity of violence are not associated with changes in economic conditions at the local level.

First, serial correlation of violence may represent a problem for my identification if the effect of violence in a particular period is strongly correlated with previous realizations in violence. To test for this, Appendix Table C8 shows the associations between violence at time t and violence at time t-k. Regressions control for municipality, month, and year fixed effects, so that the coefficients shown in the table represent the correlation in intensity of violence over time. The lack of statistical significance in these coefficients suggest little serial correlation over time in the intensity of violence.

Second, I formally analyze how changes in the intensity of violence are associated with changes in aggregate economic variables such as the municipality–GDP per capita and the unemployment rate. Appendix Table C9 indicates that the associations between these economic variables at time $t-1$, t, and $t+1$ and violence at t, controlling for geographic and time fixed-effects, do not seem to be statistically significant, providing some evidence that the variation in violence I exploit in my identification strategy (monthly-municipality) is not confounded with changes in these indicators.

1.2 Additional Controls

In this section, I explore how the effects of violence on children's HAZ behave if I include controls for more aggregate measures that could be potentially correlated with violence and could affect the outcome. Appendix Table C10 shows the stability in the coefficients of massacres after accounting for other early-life shocks or aggregate trends: Exposure to violence in the second and third trimesters of pregnancy and exposure during early childhood have a negative and significant impact on HAZ, and the effect is in line with those in the baseline model (column 1). In sum, these findings provide some evidence that massacres capture sudden changes in local violence and that they do not seem to be correlated with changes in other potential aggregate-level factors affecting a child's development.
$*$ $*$ $*$ $*$ $*$ $*$ $*$ $*$ $*$

A Appendix: Quotes of Victims of Massacres

A victim who survived the massacre of Segovia (a small municipality in the department of Antioquia) in September 11, 1998 reports her testimony 15 years later:

> *How were the days before the massacre? Were there any warnings?*
> We used to go out normally. People said: "Do not go out because there are some strange cars, different people from us." They had found some warnings that said "Death to Revolutionaries from the Northeast" and they had written them in the walls and in the town hall.
>
> *Did the warnings persist for many days?*
> Yes. During the day we tried to act normal. But at 4pm ... the fear and sadness began. We thought someone was coming to knock on the door, and they were going to throw us bombs ("granadas") or do something.
>
> *What happened that day?*
> They entered the house, knocked down the doors, windows, destroyed everything there was. They threw us bombs, broke the t.v., ..., everything was damaged. They killed my sick dad .... They killed my two brothers .... Really painful. I was disabled. I can't work. I have suffer from a heart disease. (Bonilla, 2013).

Another victim from the massacre of El Tigre, in the department of Putumayo, on January 9th, 1999, reports his testimony:

> During the massacre, paramilitary groups burnt six houses. These were the places where our businesses operated, places where people not only lived but places where people worked. They destroyed our sources of work. After eight days and with the presence of [Colombian] army, the same paramilitary groups burnt another house. That same night they also destroyed some of our property, the tv, plants, everything was stolen. From my house for example they took some jewelry and money. Our animals also suffered with the massacre, then we had no eggs to sell [at the local market], or hens or pigs to sell. Anyhow, there was anyone willing to buy, there was no money. Many abandoned the farms, stopped going there ... (Grupo de Memoria Historica, 2013, 52).

FIGURE 1: Newspaper Coverage on Massacres.

Sources: EL TIEMPO, April 24th, 1996; El Colombiano, August 3rd, 1997.

Note: The newspaper headings on the left and right traslate as "Massacre was announced 15 days ago" and "Paramilitary attack killed 8 people".

B   Appendix: Selection Tests

TABLE B1. Violence Exposure and Maternal Characteristics

	Mother's age>30	Mother has primary or <	Mother has HS or <	Mother has >than HS	Married	Single
	(1)	(2)	(3)	(4)	(5)	(6)
Without municipality FE						
TRIM 1	-0.0005	0.0003	0.0013***	-0.0012	0.0007	-0.0028
	[0.0004]	[0.0014]	[0.0005]	[0.0012]	[0.0006]	[0.0036]
TRIM 2	-0.0002	0.0001	-0.0001	0.0003	-0.0001	0.0035
	[0.0004]	[0.0004]	[0.0003]	[0.0006]	[0.0003]	[0.0032]
TRIM 3	-0.0001	0.0003	-0.0006*	0.0005	0.0004	-0.0015
	[0.0004]	[0.0021]	[0.0004]	[0.0006]	[0.0003]	[0.0024]
CHILDHOOD 0-3	0.00	-0.00	0.0001	-0.00	-0.0001***	0.00
	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0000]	[0.000]
CHILDHOOD 3+	0.00	0.0001	-0.0001	0.00	0.0001	0.00
	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0000]
With municipality FE						
TRIM 1	-0.0005	-0.0000	0.0056*	-0.0032	-0.0002	-0.0016
	[0.0004]	[0.0004]	[0.0031]	[0.0030]	[0.0004]	[0.0013]
TRIM 2	-0.0002	-0.0002	-0.0050	0.0076**	-0.0004	0.0001
	[0.0002]	[0.0005]	[0.0052]	[0.0030]	[0.0004]	[0.0019]
TRIM 3	0.00	-0.0001	-0.0013	-0.0033	-0.0001	-0.0018
	[0.0002]	[0.0004]	[0.0024]	[0.0052]	[0.0003]	[0.0017]
CHILDHOOD 0-3	0.00	-0.00	0.00	0.00	0.00	0.00
	[0.0002]	[0.0001]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
CHILDHOOD 3+	0.00	0.00	-0.0001	0.0001	0.00	0.00
	[0.0003]	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0000]
N	13,344	13,344	13,344	13,344	13,344	13,344

Note: Each column (in each panel) was obtained from a separate regression. Models include year and month of child's birth fixed effects. The regressions in the second panel also include municipality of child's birth fixed effects. Errors are clustered at the municipality level. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

TABLE B2. Reasons for Migrating in HCB

Reason	N	%
Non-movers	13,062	85.5
Family	1,834	12.0
Violence	274	1.79
Searching for better conditions in general	39	0.26
Labor market/job	19	0.12
Other	22	0.14
Health	16	0.07
Education	7	0.05
Poverty	7	0.05
Natural disaster	4	0.03
N	15,279	100

Note: The sample includes all children 3 years of age or older in the HCB the family was interviewed in 2007 in a municipality different from where a child was born (see discussion in section 2.1.2) The sample of interest in this the study ($N = 13{,}444$) includes mostly non-movers ($n = 13{,}062$) and some movers who migrated prior their child's conception ($n = 382$).

TABLE B3. Sample Descriptive Statistics of Movers and Non-Movers in HCB

	Migration	
	Non-movers (baseline sample)	Movers
Mother Characteristics:		
Mother age ***	29.06	27.84
	[6.49]	[5.57]
Years of schooling ***	7.66	7.14
	[3.57]	[3.53]
Married ***	0.18	0.14
Cohabiting	0.55	0.52
Single ***	0.10	0.06
Divorced/widow	0.17	0.16
Child characteristics:		
Female	0.48	0.50
Age (months)	49.6	49.82
	[9.47]	[9.34]
Participates in HCB	0.50	0.49
Child outcomes:		
HAZ **	-0.98	-1.03
	[1.02]	[0.96]
PPVT **	0.00	-0.08
Math ability ***	0.00	-0.11
General knowledge ***	0.00	-0.10
Aggression	0.00	0.01
Isolation **	0.00	0.08
Adequate interaction ***	0.00	-0.11
N	13,344	2,892

Note: Sample includes all children aged 3 or older. Migration status is defined by whether a household migrated (or not) from its place of residence after the child's birth. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

TABLE B4. Selective Migration

	Height-for-age	
	Non-movers (baseline model) (1)	Movers and Non-movers (2)
TRIMESTER 1	-0.0006	-0.0001
	[0.0015]	[0.0012]
TRIMESTER 2	-0.0038***	-0.0034***
	[0.0006]	[0.0005]
TRIMESTER 3	-0.0032*	-0.0033**
	[0.0017]	[0.0014]
CHILDHOOD 0-3	-0.0006***	-0.0007***
	[0.0002]	[0.0002]
CHILDHOOD 3+	-0.0002	-0.0005*
	[0.0002]	[0.0002]
N	13,344	15,279

Note: Sample in column 1 includes children 3 or more from migrant and nonmigrant households in the HCB data. Migration is defined as whether a household reports to have been living in the municipality of interview for a shorter period (months) than a child's age. Models include controls (dummies) for child (age in months, gender, an indicator for whether the child participates in the HCB) and mother characteristics (age, education, and marital status); municipality, year, and month of child's birth fixed effects; and municipality linear time trends. Errors are clustered at the municipality level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

TABLE B5. Selective Fertility

	N of children born after a given child		Succeeding birth interval (months) after a given child		Preceding birth interval (months) before a given child	
	In-utero	In-utero to age 3	In-utero	In-utero to age 3	In-utero	In-utero to age 3
	(1)	(2)	(3)	(4)	(5)	(6)
Violence	0.0000	-0.0001	0.1255	0.0615	0.0587	0.0583
	[0.0008]	[0.0008]	[0.0842]	[0.0500]	[0.0828]	[0.2115]
Violence × Mom's age < 23	-0.0002	-0.0002	-0.1087***	0.0025	0.001	-0.0445
	[0.0010]	[0.0003]	[0.0389]	[0.0143]	[0.0317]	[0.0739]
Violence × Mom's age 23–2	-0.0001	-0.0002	-0.0108	0.0012	-0.0014	-0.0466
	[0.0007]	[0.0004]	[0.0367]	[0.0099]	[0.0316]	[0.0665]
Violence × Mom' age 27–33	-0.0007	-0.0004	-0.1035***	-0.0113	0.0213	-0.0552
	[0.0006]	[0.0002]	[0.0393]	[0.0129]	[0.0313]	[0.0735]
Violence × Mom's educ. primary or less	0.00	-0.0001	0.0439	0.000	-0.0370	-0.0586
	[0.0006]	[0.0004]	[0.0765]	[0.0230]	[0.0668]	[0.1391]
Violence × Mom's education < HS	-0.0005	0.0003	0.0061	-0.0183	-0.0614	-0.0276
	[0.0005]	[0.0003]	[0.0678]	[0.0285]	[0.0733]	[0.1239]
Violence × Mom's education HS	0.0002	0.0007***	-0.0796	-0.0459**	-0.0937	-0.0301
	[0.0005]	[0.0003]	[0.0805]	[0.0229]	[0.0623]	[0.1534]
Violence × Mom is Cohabiting	0.0001	-0.0003	0.0154	0.0094	-0.0313	0.0529
	[0.0003]	[0.0003]	[0.0417]	[0.0115]	[0.0370]	[0.0644]
Violence × Mom is Single	0.0009**	0.0001	-0.0391	0.0104	-0.0044	0.0757
	[0.0004]	[0.0005]	[0.0655]	[0.0210]	[0.0495]	[0.0626]
Violence × Rural HH	0.0023	-0.0011*	0.0196	0.0148	0.0439	-0.2001
	[0.0016]	[0.0011]	[0.0652]	[0.0220]	[0.0275]	[0.2062]
N	16,086	6,403	3,148	2,309	3,450	355

Note: The sample includes children below age 60 months in the Demography and Health Survey data (years 2000 and 2005). The outcome is defined as the number of children born after a given child is born, the succeeding birth interval (in months) after a given child is born, and the preceding birth interval (in months) before a given child is born. "Early-life Violence" is defined as the level of violence to which the child was exposed while in-utero (columns 1, 3, and 5) and similarly for violence up to age 3 (columns 2, 4, and 6, including in-utero). All regressions include controls for child's gender and age in months; mother's age, education, marital status, and whether the household is rural or urban; fixed effects at the municipality, month, and year of child's birth, and municipality linear time trends. Errors are clustered at the municipality level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

TABLE B6. Selective Survival

	Child died in 1st mth		Child died before age 1		Child died before age 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Violence	0.0000	-0.0002	0.0001	0.000	0.000	0.0002
	[0.0001]	[0.0002]	[0.0001]	[0.0001]	[0.0003]	[0.0002]
Violence × Mom's age < 23		0.0003		0.0002		0.0002
		[0.0003]		[0.0003]		[0.0002]
Violence × Mom's age 23–26		0.0002		0.0002		-0.0002*
		[0.0003]		[0.0003]		[0.0001]
Violence × Mom's age 27–33		0.0004**		0.0002**		-0.0001
		[0.0001]		[0.0001]		[0.0001]
Violence × Mom's educ≤primary		-0.0003		-0.0002		-0.0003*
		[0.0003]		[0.0002]		[0.0002]
Violence × Mom's educ< HS		-0.0002		-0.0002		-0.0004**
		[0.0002]		[0.0001]		[0.0002]
Violence × Mom's educ HS		-0.0003		-0.0002		0.00
		[0.0002]		[0.0001]		[0.00002]
Violence × Mom is cohabiting		0.0000		0.0000		0.0001
		[0.0001]		[0.0001]		[0.0001]
Violence × Mom is single		0.0003		0.0003**		0.0003***
		[0.0002]		[0.0001]		[0.0001]
Violence × Rural HH		0.0002		0.0002		0.0009*
		[0.0005]		[0.0004]		[0.0005]
N	16,070	16,070	12,693	12,693	6,190	6,190
Mean (%)	1.4		2.1		2.4	

Note: Sample includes children under 60 months of age in the Demography and Health Survey data (years 2000 and 2005). The outcome is defined as whether a child survived the first month, first year, or third year of life. Sample in columns 1 and 2 is restricted to those children aged one or more months, those aged 12 or more months in columns 3 and 4, and aged 36 or more months in columns 5 and 6. "Early-life Violence" is defined as the level of violence to which the child was exposed to in-utero (columns 1 and 2); violence in-utero and during the first year of life (columns 3 and 4); violence in-utero and during the first three years of life (columns 5 and 6). All regressions include controls for child's gender and age in months; mother's age, education, and marital status, whether the household is rural or urban; municipality, year, and month of child's birth fixed effects, and municipality linear time trends. Errors are clustered at the municipality level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

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C   Appendix: Other Robustness Tests

TABLE C7. Municipality Characteristics by Violence

	Full sample	Violence Low	Violence High
N of victims of massacres (monthly)***	0.081	0.011	0.275
	[1.002]	[0.228]	[1.888]
GDP per capita (million pesos) ***	6.82	6.72	6.92
	[7.30]	[7.56]	[5.83]
Avg. years of education **	6.70	6.63	6.89
	[1.36]	[1.285]	[1.525]
Unemployment rate **	13.26	13.17	13.47
	[3.04]	[2.92]	[3.29]
Poverty 2005 *	44.28	44.96	42.47
	[20.29]	[19.37]	[22.46]
Homicide rate (homicides/pop*1,000) (monthly) ***	0.061	0.047	0.098
	[0.153]	[0.139]	[0.181]
Rainfall (mm) **	176.55	166.00	204.93
	[159.89]	[154.19]	[171.09]
N (municipality*year*month)	106,093	77,869	28,224
N municipalities	1,119	822	297

Note: Sample includes all 1,119 municipalities in Colombia, over the 8 year period of interest, 1999-2007. Standard deviations are shown in brackets. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

TABLE C8. Violence at Time t and Violence at Time t-k

	Violence j,t											
Violence j,t-1	0.024 [0.018]	0.024 [0.018]	0.023 [0.017]	0.023 [0.017]	0.023 [0.017]	0.023 [0.017]	0.023 [0.017]	0.023 [0.017]	0.023 [0.017]	0.023 [0.017]	0.023 [0.017]	0.023 [0.017]
Violence j,t-2		0.024 [0.016]	0.024 [0.016]	0.024 [0.016]	0.024 [0.016]	0.024 [0.016]	0.024 [0.015]	0.024 [0.015]	0.024 [0.015]	0.024 [0.015]	0.024 [0.015]	0.024 [0.015]
Violence j,t-3			0.015 [0.011]	0.015 [0.010]	0.015 [0.010]	0.015 [0.010]	0.015 [0.010]	0.015 [0.010]	0.015 [0.010]	0.015 [0.010]	0.015 [0.010]	0.015 [0.010]
Violence j,t-4				0.016 [0.014]	0.016 [0.014]	0.016 [0.014]	0.016 [0.014]	0.016 [0.014]	0.016 [0.014]	0.016 [0.014]	0.016 [0.014]	0.016 [0.014]
Violence j,t-5					0.007 [0.014]	0.007 [0.014]	0.007 [0.014]	0.008 [0.014]	0.008 [0.014]	0.008 [0.014]	0.008 [0.014]	0.008 [0.014]
Violence j,t-6						-0.005 [0.009]	-0.005 [0.009]	-0.005 [0.009]	-0.005 [0.009]	-0.005 [0.009]	-0.005 [0.009]	-0.005 [0.009]
Violence j,t-7							0.002 [0.005]	0.002 [0.005]	0.002 [0.005]	0.002 [0.005]	0.002 [0.005]	0.002 [0.005]
Violence j,t-8								-0.005 [0.007]	-0.005 [0.007]	-0.005 [0.007]	-0.005 [0.007]	-0.005 [0.007]
Violence j,t-9									-0.009 [0.006]	-0.009 [0.006]	-0.010 [0.006]	-0.010 [0.006]
Violence j,t-10										0.005 [0.009]	0.005 [0.009]	0.005 [0.009]
Violence j,t-11											0.004 [0.007]	0.004 [0.007]
Violence j,t-12												-0.000 [0.006]
N (thousands)	108	108	108	108	108	108	108	108	108	108	108	108
R^2	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06

Note: Regressions include municipality, year, and month FE; errors are clustered at the municipality level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

TABLE C9. Violence and Economic Development

	Violence j,t		
	(1)	(2)	(3)
GDP per capita			
GDP pc t	0.0141	0.0041	0.00336
	[0.0159]	[0.0078]	[0.0112]
GDP pc t-1		-0.0012	
		[0.01019]	
GDP pc t+1			-0.0014
			[0.0090]
N	107,919	107,919	107,919
Unemployment rate			
UR t	-0.0214	-0.0083	0.0091
	[0.0342]	[0.0058]	[0.0077]
UR t-1		0.0047	
		[0.0065]	
UR t+1			0.01409*
			[0.0078]
N	107,919	107,919	107,919

Note: The data used here include a panel of 1,100 municipalities in the period 1997–2007. Regressions include municipality and year fixed effects; errors are clustered at the municipality level. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

TABLE C10. The Effects of Violence on Child's Health (HAZ) Controlling for Additional Variables

	Baseline model	Homicide rate	% Forced displaced pop.	Rainfall shocks	Unemployment rate	GDP per capita	Quality of Institu-tions
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trim 1	-0.0006	-0.0004	-0.0006	-0.0006	-0.0006	-0.0006	-0.0011
	[0.0015]	[0.0016]	[0.0015]	[0.0014]	[0.0015]	[0.0015]	[0.0014]
Trim 2	-0.0038***	-0.0035***	-0.0039***	-0.0038***	-0.0038***	-0.0038***	-0.0041***
	[0.0006]	[0.0006]	[0.0006]	[0.0007]	[0.0007]	[0.0007]	[0.0008]
Trim 3	-0.0032*	-0.0030*	-0.0032*	-0.0033**	-0.0033*	-0.0033*	-0.0023
	[0.0017]	[0.0017]	[0.0017]	[0.0017]	[0.0017]	[0.0017]	[0.0022]
0-3	-0.0006***	-0.0005**	-0.0006***	-0.0007***	-0.0006***	-0.0006***	-0.0005
	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0003]
3+	-0.0002	-0.0002	-0.0003	-0.0003	-0.0002	-0.0002	0.0001
	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0005]
N	13,344	13,297	13,340	12,695	13,353	13,353	13,353

Note: Column 1 shows results using the baseline column. Models in columns 2-8 include one additional control (column label) to the baseline model. The unit of geographic and temporal variation in columns 1-4 is municipality-month; in column 5, is department-year, and in columns 6 and 7 is year-municipality. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.